

LLNL Environmental Restoration Division Standard Operating Procedure		TITLE: Sample Control and Documentation	
APPROVAL	Date	PREPARERS: V. Dibley and R. Goodrich	
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APPROVAL	Date	PROCEDURE NUMBER: ERD SOP-4.2	
Division Leader		REVISION: 2	
CONCURRENCE	Date	EFFECTIVE DATE: December 1, 1995	
QA Implementation Coordinator		Page 1 of 36	

*Operations and Regulatory Affairs Division

**Weiss Associates

1.0 PURPOSE

To define the necessary steps for sample control and completion of required documentation.

2.0 APPLICABILITY

This SOP describes the methodology of sample control and documentation applicable to the Site 300 and the Livermore Environmental Restoration Programs and those portions of the Operations and Regulatory Affairs Division's Environmental Monitoring Program conducted by the Environmental Restoration Division. Documents include logbooks, ground water sampling data logs, Chain-of-Custody (CoC) forms and analytical records. Permanent ink must be used to record all information in documents containing sample identification (ID) codes, document control numbers, etc.

3.0 REFERENCES

- 3.1 LLNL Environmental Protection Department, EPD Quality Assurance Management Plan (QAMP).

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 2 of 36
------------------------------	----------------------	------------------------------------	--------------

4.0 DEFINITIONS

4.1 Chain-of-Custody (CoC)

A method and record used for documenting the history and sequential possession of a sample from the time of collection or generation through analysis and data reporting.

4.2 Ground Water Sampling Log

A data collection form which is routinely completed in the field describing a ground water sampling event in detail.

4.3 Borehole/Well Construction Log

A data collection form completed during drilling and well construction activities describing the lithology, well completion, and soil sampling details.

5.0 RESPONSIBILITIES

5.1 Data Management Group (DMG)

The DMG, in affiliation with the SC, is responsible for issuing all logbooks and maintaining a master file recording all logbook transactions, as well as archiving completed logbooks, field logs, shipping forms, and CoCs.

5.2 Drilling Coordinator (DC)

The DC's responsibility is to review CoC forms from soil sample submission and to review drilling logs.

5.3 Sampling Coordinator (SC)

The SC's responsibility is to coordinate and schedule sampling activities, ensuring that all activities are recorded in a controlled field log book, and that sampling logs and CoCs are completed correctly.

6.0 PROCEDURE

6.1 Office Preparation

- 6.1.1. Review site SOPs.
- 6.1.2. Coordinate schedules with the SC or appropriate personnel.
- 6.1.3. Acquire the appropriate logbook from the DMG or the SC for the specific work project if necessary.
- 6.1.4. Obtain sampling schedule, field sheets, CoCs, and other relevant documentation.

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 3 of 36
------------------------------	----------------------	------------------------------------	--------------

6.2 Field Logbooks

- 6.2.1 Each new logbook should be issued by the DMG in conjunction with the Site 300 or Livermore Site SC to eliminate potential duplication of logbook codes. Attachment A lists the current logbooks and their locations.
- 6.2.2 All information pertinent to a field project must be entered in a bound book with consecutively numbered pages. Entries in the logbooks should reflect the sampling event as accurately as possible. Whenever a field data sheet is used, such as the Ground Water Sampling Log, detailed sampling information should be entered on the form and a brief overview of the event recorded in the appropriate logbook. As a guide, examples of sample entries can be found near the front cover of each logbook.
- 6.2.3 Sampling notes should be descriptive and include the following essential information:
 - A. Date and time of sampling.
 - B. Sample ID code.
 - C. Method of sample collection, including preservation techniques, size or volume, description of the matrix of the sample, and any deviations or anomalies noted.
 - D. Requested analysis and analytical lab performing the analysis.
 - E. Condition of sampling site relevant to sample validity.
 - F. Results of associated field measurements.
 - G. Calibration information pertaining to field instruments used for the sampling event.
 - H. ID of field personnel performing the work.
 - I. ID of field equipment (model number, serial number).
 - J. Special notes of other activities in the area which may have an impact on analytical results.
- 6.2.4 Log book entries should be made in indelible ink. Any changes/corrections made to logbook entries should have a single line thorough it with the date and initials of the personnel making the changes DO NOT white out or remove of pages from logbooks!

6.3 Data Collection Forms

- 6.3.1 Specific data collection forms are often used during sampling activities. Each data collection form initiated during sampling becomes a controlled document and receives a document control number. Document control numbers are a 2-character and 3-digit code derived from the logbook code and page number for that specific sample. An example of a routinely used data collection form is the Ground Water Sampling Log (Attachment A in SOP 2.1). Specific details describing a ground water sampling event is recorded on this form and includes all items listed in Section 6.2.2. Another type of data form is the Borehole/Well Construction Log (SOP 1.1, Attachment A).

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 4 of 36
------------------------------	----------------------	------------------------------------	--------------

6.4 Chain-of-Custody Record (CoC)

- 6.4.1 The primary objective of using a CoC (Attachment B) is to create an accurate written record that can be used to trace the possession and handling of the sample from the moment of its collection through analysis and receipt of data. The CoC is a legal document and is also used as a binding contractual agreement for services rendered.
- 6.4.2 A sample is considered to be in “custody” if:
- A. It is in one’s actual possession, or
 - B. It is in one’s plain view, after being in one’s physical possession, or
 - C. It is in one’s physical possession, and then locked up so that no one can tamper with it.
- 6.4.3 Once a sample is collected, a CoC record is initiated and a document control number assigned. The CoC document control number is the same number placed on any data collection form and is derived from the logbook code and page number upon which the sampling information is recorded. For example, a ground water sample that has sampling information recorded in logbook AH, page 23, would be assigned CoC document control number AH023. Multiple samples may be placed on the same CoC provided that the samples have the same document control number. The document control number is written on the CoC in the space provided.
- 6.4.4 The following information should also be provided on the CoC by sampling personnel:
- A. Sample matrix as listed in Attachment C.
 - B. Name of sampler and employer.
 - C. Requested analysis as listed on the Sampling Plan or Attachment D.
 - D. Number and type of container(s).
 - E. Sample ID and sample date/time.
 - F. Study area/operable unit from which sample originated.
 - G. The analytical laboratory name where samples are to be sent using the code as listed in the first or the third column in Attachment E.
 - H. Individuals requiring facsimile (fax) results.
 - I. The applicable Requester name circled.
 - J. Additional information/instructions to the laboratory.
 - K. Requested turnaround time.
 - L. LLNL account number to authorize internal analytical laboratories to perform work requested (available from the Project/Task Leader).
- 6.4.5 The analytical laboratory should be instructed in the remarks section of the CoC form to verify any detections in the critical wells listed in Attachment F and contact the appropriate ERD personnel immediately. The quarterly Routine Sampling Schedule for Site 300 notes the critical wells that should be clean. The remarks

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 5 of 36
------------------------------	----------------------	------------------------------------	--------------

section should also indicate whether field filtration and preservation has been performed, or if it is required upon receipt at the lab.

- 6.4.6 The completed CoC accompanies the samples which may be hand-carried by the sampling personnel to a lock box located at Site 300 or Livermore where the samples will be picked up by an external analytical laboratory's courier. When the samples are relinquished, the CoC is signed by the sampler. The samples may also be hand carried to the SC for delivery to an on-site laboratory or to the LLNL Shipping Department if the off-site laboratory does not pay for shipment. The SC will sign the CoC at the time of receipt and delivery. SOP 4.4 describes the handling, packaging and shipping in more detail.
- 6.4.7 When the analytical laboratory is paying for shipment (via a courier or Federal Express) of samples classified as non-hazardous, an ERD Shipping Form (Attachment G) must be filled out completely. The ERD Shipping Form consists of two pages. One page must be sent to the LLNL Traffic Office and the other to ERD's DMG. Samples meeting the Department of Transportation (DOT) definition of hazardous materials and/or that require LLNL to pay for shipping (via Federal Express), must go through the LLNL Shipping Department and use their Shipping Document (Attachment H). See ERD SOP 4.4, "Guide to the Handling, Packaging, and Shipping of Samples."
- 6.4.8 The laboratory courier or SC should leave the pink copy of the CoC with the DMG. The analytical laboratory keeps the yellow copy and returns the completed white copy with the analytical results. A completed CoC should always accompany the official hard copy results. The appropriate analytical laboratory personnel signature should be on the CoC to indicate the receipt of the sample.
- 6.4.9 The project SC ensures that all required sampling information has been recorded in the appropriate logbook and verifies that sampling was performed in accordance with specific requests. The DMG will enter the information from the completed CoC into the database system to electronically track each individual sample. As the results of analyses are returned, the DMG verifies the completion of the analysis initiated by the CoC. In this manner, all sample results are tracked both electronically and manually. The samples are traceable through the logbook in which the original field notes were recorded.

6.5 Sample Identification Labels

- 6.5.1 Use ID labels when tagging or labeling sample containers. The sampling personnel may fill out sample container labels after collecting samples or prior to collecting samples at each location. However, extreme care must be taken to ensure that the container label corresponds to the correct location! Waterproof ink must be used on the label and applied to each sample and sealed in a Ziploc-type bag. An example of the common sample label to be used is shown in Attachment I.
- 6.5.2 The Sample ID Label must include the following information:
 - A. Sample ID. The sample ID can be made up from the combination of various factors such as location, sample type, etc. The DMG's Monitoring Database Location Table contains all sample IDs previously used. The table is continuously updated. If a new location is to be sampled or an experiment is to be conducted, the DMG must be consulted and approve all new sample IDs. The new names will be added to the Location Table. See Attachment J for examples of sample IDs and how they were generated.

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 6 of 36
-------------------------------------	-----------------------------	---	---------------------

- B. Project name.
- C. Sample date. The date when the sample was collected.
- D. Sample time. Time is recorded according to the 24-h clock (e.g., 1:00 a.m. = 0100 h, 3:00 p.m. = 1500 h).
- E. Samplers' initials. The initials of personnel conducting the sampling.
- F. Preservation method. Any preservative added to the sample should be indicated.
- G. Comments. Any additional information.
- H. Requested analysis. The type of analysis to be performed on the sample. (Optional)

6.6 Post Operation

- 6.6.1 Verify that all sample containers have been correctly identified and labels have all necessary information.
- 6.6.2 Complete logbook entries, checking to verify that entries are accurate, all pages have been signed or initialed, and the initiation of all data collection forms has been recorded in the logbook. Also, verify that data collection forms have document control numbers.
- 6.6.3 Handle, package, and ship samples according to SOP 4.4.
- 6.6.4 Turn over all original sample data records (logbooks, data collection forms, CoCs, etc.) to the SC and/or DMG.

7.0 QA RECORDS

- 7.1 Chain-of-Custody forms
- 7.2 Logbooks
- 7.3 Data collection forms
- 7.4 Borehole/Well Construction Log

8.0 ATTACHMENTS

- Attachment A—List of Logbooks and Their Locations
- Attachment B—Chain-of-Custody Form
- Attachment C—Sample Matrix Codes
- Attachment D—Requested Analysis and Description Table
- Attachment E—Analytical Laboratory Codes
- Attachment F—Critical Well List
- Attachment G—ERD Shipping Document
- Attachment H—LLNL Shipping Document
- Attachment I—Examples of Sample Labels
- Attachment J—Examples of Sample Identifications and How They are Generated

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 7 of 36
------------------------------	----------------------	------------------------------------	--------------

Attachment A

List of Logbooks and Their Locations as of March 1995

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 8 of 36
-------------------------------------	-----------------------------	---	---------------------

Log Book Designations

AS - Arroyo Sampling -Peter Weiler-Weiss Assoc. p.18

Series C reserved for TFB (except CT)

CA - Treatment Facility B-Paul Anderson@p.29

CB - Treatment Facility B - Scott Kawaguchi - 11-5-92

CC- Treatment Facility B - Scott Kawaguchi 6-1-94

CT-Cooling Tower collected H2O pumped into tower-Herk Van Noy

FISCAL 1995 TFB LOGBOOKS

BAX - TFB REGULATORY SAMPLING LOGBOOK FY95 - Scott Kawaguchi 9-30-94

BAA - Treatment Facility B - Scott Kawaguchi - 9-30-94

Series D reserved for Mainsite Well Drilling

DA - Well drilling & development -Bern Qualheim p.5

DB - Well drilling & development@p.6

DC - Well drilling & development@p.7

DD - Well drilling & development-available, (used thru p.12)p.10

DE - Well drilling & development - Sue Booth-Weiss Assoc.p.11

DF - Well drilling & development-Complete - 9-8-92

DG - Well drilling & development-Dana Brown-Weiss Assoc.p-19

DH - Well drilling & development-Scott Nelson-Weiss Assoc.@p.23

DI - Well drilling & development-Jim Chiu-Weiss 9-8-92

Series E reserved for TFA

EB - Treatment Facility A -Paul Anderson @ Stored at TFA p.26

EC - Treatment Facility A - Paul Anderson

ED - Treatment Facility A - Paul Anderson-11-20-90/1-9-92

EE - Treatment Facility A - Paul Anderson-1-8-92

EF - Treatment Facility A - Paul Anderson-4-16-93

FISCAL 1995 TFA LOGBOOKS

AAX - TFA REGULATORY SAMPLING LOGBOOK FY95 - Paul Anderson 9-30-94

AAA - Treatment Facility A - Paul Anderson - 9-30-94

Series F reserved for TF 5475

FA - Treatment Facility 5475 - Said Hassan-23 sept. 1993

Series G reserved for Gas Pad and TFF

GA - Gas Area sampling logbook@-missing last contact C.Perkins p.14

GB - Gas Area sampling logbook-@ p.24

GC - Gas Area sampling logbook-Dennis White-@-at Gas Pad p.30

GD-Gas Area sampling logbook-Dennis White-@-at Gas Pad p.32

GE- Gas Area sampling logbook-Dennis White@ p.32

GF- Gas Area sampling logbook-George Cook

GG- Gas Area sampling logbook-Dennnis White (8-8-91/ 1-7-92)

GH- Gas Area sampling logbook-Dennis White (1-7-92/3-6-92)

GI- Gas Area sampling logbook-Dennis White (3-4-92/)

GJ- Gas Area sampling logbook-B. Johnson (8/5/92) finished dkb

GK -Dennis White

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 9 of 36
-------------------------------------	-----------------------------	---	---------------------

GL- Dennis White -5-3-93
GM- Dennis White - 7-22-93

Log Book Designations

GN - Dennis White - 7-30-93 (Drilling logbook=Jennifer N.L.) Returned to DMT 4-25-94
GO - Dennis white - 11-15-93 -TFF
GP - Dennis White - 4-28-94 - TFF

FISCAL 1995 TFF LOGBOOKS

FAX - TFF REGULATORY SAMPLING LOGBOOK FY95 - Dennis White 9-30-94
FAA - Treatment Facility F - Dennis White - 9-30-94

Series L(except LANSA) reserved for TFD

LANSA- NPDES Discharge-Len Walz 29449
LB - Treatment Facility D - Steve Orlof(02-15-94)
LC - Treatment Facility D - Steve Orlof (9-15-94) Finished 9-30-94 dkb

FISCAL 1995 TFD LOGBOOKS

DAX - TFD REGULATORY SAMPLING LOGBOOK FY95 - Steve Orloff 9-30-94
DAA - Treatment Facility D - Steve Orloff - 9-30-94

Series M reserved for Mainsite miscellaneous

MA - Miscellaneous-B-543-rm 1247 p.8
MB - Miscellaneous-Dorothy Bishop p.9
MD - Bulk thermal desorption chamber analyses-Dorothy Bishop p.9
ME - Bulk thermal desorption chamber analyses-Dorothy Bishop p.9
MF - Bulk thermal desorption chamber analyses-Dorothy Bishop p.9
MG - Soils Characterization - Dorothy Bishop p.9
MH - Vadose Soils Characterization - Dorothy Bishop p.9
MI - Unofficial use see pg 9
MJ - Unofficial use see pg 9
MK - Unofficial use see pg 9
ML - Unofficial use see pg 9
MM- Dorothy Bishop- 4-4-91 p.9
MN - Miscellaneous-T5425-rm 1023-Greg Howard p.9 Returned to DMT
MO - Stan Martins - 22-sept-1993

Series N reserved for ORAD

Series O reserved for Treatment Facility C

OA - Treatment Facility C-Hurk Van Noy (9-24-93)

FISCAL 1995 TFC LOGBOOKS

CAX - TFC REGULATORY SAMPLING LOGBOOK FY95 - Herk Van Noy 9-30-94
CAA - Treatment Facility C - Herk Van Noy - 9-30-94

Series R(except RB) reserved for TFE

RB - Retention basin -available, used thru p. 3 p.17

Series S reserved for Source investigation

SA - Source invest.-soil vapors-Jon Hoffman-Weiss Assoc. p.21-returned 11-10-94

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 10 of 36
-------------------------------------	-----------------------------	---	----------------------

SB - Source invest.-soil boring-T-4125, Jon Hoffman @ p.22-returned 11-10-94
 SC - Source Invest.- soil boring-John Hoffman-Weiss@-damaged p.33-returned 11-10-94
 SD - Source Invest.- soil boring-John Hoffman-Weiss-12/19/90 p.33-returned 11-10-94
 SE - Source Invest.- soil boring-John Hoffman-Weiss-8/24/92-returned 11-10-94
 SF - Source Invest.- soil boring-John Hoffman-Weiss-11-8-93

Log Book Designations

NOTE: TG thru TZ are reserved for S300
 TA through TF reserved for Mainsite underground tank(See S300 list)
 TA - Underground Tank-Marion Heaton p.13
 TC - Underground Tank-Jerry Duarte p.28
 TD- Underground Tank- Barbara Mallon p.37
 TE - Tree Ring Sampling - Barbara Mallon p. 46

Series W reserved for Mainsite routine water sampling
 WA - Water sampling logbook@ p.2
 WB - Water sampling logbook-Cover lost-discontinued 4/25/90@ p.3
 WC - Water sampling logbook@ p.4
 WD - Water sampling logbook- @ p.20
 WE - Water sampling logbook - Jim Ruef - BCAL p.34
 WF - Water sampling logbook - @ 4-18-91 p.35
 WG - Water sampling logbook - Scott Polston - Complete 8-6-92
 WH - Water sampling logbook - Scott Polston -BCA - 8-6-92
 WI - Water sampling logbook - Rick Mckinney -GTI - 3-30-94

Series X reserved for Mainsite Treatment Facility NPDES self monitoring
 XA - (TFA) npdes self monitor - Paul Anderson@ p.27
 XB - (TFA) npdes self monitor - Complete 3-2-93
 XF - (TFA) npdes self monitor - Paul Anderson
 XG
 XC - (TFB) - NPDES self monitoring logbook - Scott Kawaguchi- 2/21/91 p.27
 XD - (TFB) - NPDES Scott Kawaguchi - 4-25-94 Master pg 42
 XE

Series Y reserved for TFG
 YA - TFG - Paul Anderson - 10-07-93

Series A(except AS) reserved for S300 routine water sampling
 AA - routine water sampling-closed
 AB - routine water sampling-closed
 AC - Routine Water Sampling - 3H sampling, ORAD
 AD - Routine Water Sampling - 3H sampling
 AE - Routine Water Sampling - HE area, ORAD
 AF - Routine Water Sampling - 3H sampling, ORAD
 AG - Routine Water Sampling - Site Wide, Mike Stinar
 AH - Routine Water Sampling - Office
 AI - Routine Water Sampling - Site Wide, Mike Stinar
 AJ - Routine Water Sampling - Site Wide, Mike Stinar
 AK - Routine Water Sampling - 3H sampling, Eric Walter
 AL - Routine Water Sampling - Scott Jett
 AM - Routine Water Sampling - Becky Goodrich 4-10-95

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 11 of 36
-------------------------------------	-----------------------------	---	----------------------

AN - Routine Water Sampling - Becky Goodrich 5-16-95

Series B reserved for S300 well drilling/boreholes

BA - Well Drilling-Boreholes-closed

BB - Well Drilling-Boreholes-closed

BC - Well Drilling-Boreholes-closed returned finished 10-94 - borrowed 5/12/95 Jeni Martins

BD - Well Drilling-Boreholes - Jack Gardner

BE - Well Drilling -Boreholes - Jeni Martins 10-25-94

Log Book Designations

DA - Data Review Request - Valerie Kiszka (DA also used for Mainsite Drilling)

Series H not reserved

HA - Hazwrap-S300 Corp. Yard, closed

HB - Hazwrap-S300 Corp. Yard, closed

HC - Hazwrap-S300 Corp. Yard, closed

HD - Hazwrap-S300 Corp. Yard, closed

Series I not reserved

IA - Invoice Tracking - Valerie Kiszka

Series J reserved for S300 well development and hydraulic testing

JA - Well development & Hydraulic Testing-S300 Corp. Yard

JB - Well development & Hydraulic Testing-S300 Corp. Yard

JC - Well development & Hydraulic Testing-S300 Corp. Yard

Series K reserved for S300 Dry well investigation

KA - Dry well investigation-300 corp. yard

KB - Dry well investigation-300 corp. yard

Series N reserved for ORAD(see below)

NCAR - Non-Conformance Corrective Action Report - Valerie Dibley

Series P reserved for S300 Soil Vapor Sampling

PA - Soil Vapor Sampling - closed

PB - Soil Vapor Sampling - Jack Gardner

PC - Soil Vapor Sampling - Becky Goodrich 9-15-94

PD - Soil Vapor Sampling - Becky Goodrich 9-15-94

NOTE: TA thru TF are reserved for Mainsite

Series T reserved for S300 Treatment Facilities(check Mainsite list)

TG - Central GSA Treatment Facility - John Kilmer

TH - Eastern GSA Treatment Facility - (closed @ 843 Corp Yd.)

TI - EGSA Treatment Facility - John Cunningham

TJ - B834 water & vapor sampling - for remediation system @ S300 -Marvin Lima

TK - CGSA Treatment Facility - John Kilmer 9-26-94

TL - 833 Sparging System - John Cunningham

TM - 834 treatment Facility - Marvin Lima 2-21-95

Series U reserved for S300 Underground tanks

UA - Underground tanks-S300 corp. yard

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 12 of 36
-------------------------------------	-----------------------------	---	----------------------

Series V reserved for S300 Vegetation
VA - Vegetation Sampling - Office

Series Z reserved for S300 Miscellaneous
ZA - Miscellaneous Sampling - Becky Nations
ZB - Miscellaneous Sampling - Steve Gregory
ZC - Miscellaneous Sampling - S300 Corp Yd
ZD - Miscellaneous Sampling - Sam Martins
ZE - Miscellaneous Sampling - Alison West
ZF - b834 trough sampling - Rich Stanley assigned 10-21-94 dkb

Log Book Designations

ORAD Logbooks

Series N reserved for ORAD
NA - pre construction ORAD - JOE WOODS -COMPLETED
NB - pre construction ORAD - JOE WOODS -
NC - incident response/misc. - JOE WOODS-
ND - MISC S300 SAMPLES - JOE WOODS -
NE - Tank extractions - MARION HEATON -

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 13 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment B

Chain-of-Custody Form

ERD Chain-of-Custody Record and Analytic Instructions

Page ____ of ____

A00000

Sampled By : _____

Sampler's Employer: _____

Project Name : _____

Analytical Lab Please
Fax or Email copies to:

Name _____

Name _____

Name _____

Requester, (circle one)

S300

WGMG

Livermore

Send all results to:

Attn: ERD DMG L-528
Lawrence Livermore
National Laboratory
P.O. Box 808
Livermore, CA 94550

Field Log Book# (COC#) _____ Release # _____

LLNL Acct. # _____ Sampling Release# _____

Analytical Laboratory Name _____

Analytical Laboratory Log # _____

Analysis & Turnaround
Required ¹

Additional Instructions to Lab

(circle one)
Fax# / Email _____

Fax# / Email _____

Fax# / Email _____

Sample Identification	Sample Date/Time	Matrix ² Container ³	# of Cont.	Study Area	* Remarks *									
1														
2														
3														
4														
5														
6														
7														
8														
9														

ERD

Signature	Company	Time	Date
Relinquished by			
Received by			
Relinquished by			
Received by			
Relinquished by			
Received by			

¹ N = normal turnaround, X = 16-hr. turnaround, R = 24-hr. turnaround,
H = Hold do not analyze unless requested

² Sample Matrix Codes: See list on back of pink copy

³ Container type codes: V = VOA Bottle, P = Polyethylene Bottle,
G = Glass Bottle, T = Brass Tube,
B = Bag, S = Stainless Steel Tube,
O = Other (specify under remarks)

To receive copies of this data from DMG

CC: _____

Revision 4.1
1 Oct 95 ERD

White : Laboratory return to ERD
Attn: ERD Data Management Team L-528

Yellow : Analytical Lab

Pink: Sampler leave with ERD
Attn: ERD Data Management Team L-528

Procedure No.
ERD SOP-4.2

Revision Number
2

Effective Date
December 1, 1995

Page 14 of 36

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 15 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment C

Sample Matrix Codes as of October 1995

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 16 of 36
------------------------------	----------------------	------------------------------------	---------------

2-oct-1995

08:55:34

SAMPLE MATRIX

?? matrix not established
 AF air filter
 AQ aqueous
 AS asphalt
 AT air tritium
 BF backfill
 BW blank water
 CH charcoal
 CO concrete
 CV condensed vapor sample
 DF drilling fluid
 DS dosimeter
 DW drinking water
 GR gravel
 GW ground water
 HY honey
 LI liquid, nonaqueous
 ML milk
 OT other
 PD pad from Seamist soil vapor monitor
 RA rain
 RO stormwater runoff
 RT retention tank liquid
 SL sludge, liquid
 SO soil or sediment
 SS sludge, solid
 SW sewer effluent
 TW cooling tower water
 VA vapor or air
 VB vapor blank
 VG vegetation
 WA waste, solid
 WI wine
 WP sampling wipe
 WW wastewater

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 17 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment D

Requested Analysis and Description Table as of October 1995

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 18 of 36
------------------------------	----------------------	------------------------------------	---------------

2-oct-1995
08:55:14

Requested Analyses and Descriptions

Requested Analysis	Description
ALT601	Purgeable Halocarbons - Gas Chromatography by direct injection
ALT602	Purgeable Aromatics - Gas Chromatography by direct injection
ANIONS	Miscellaneous anions not included in other suites (F-, Cl-, ALK, Sulfate)
ASTMD-3416	Atmospheric gases by percent; constituents analyzed by GC/TCD/FID
BAAQMD22 BIO	Bay Area Air Quality Management District Method 22 Coliform; Strep; Plate Count; Alk; Residual Cl; Conductivity; Hardness; FishTox; CFU; Soil Bacteria
CAMMSTLC	CAM metals in Soil or Water
CAMMTTLC	CAM metals in Soil or Aqueous Unfiltered samples
CAMOSTLC	CAM Organics in Soil or Water
CAMOTTLC	CAM organics in Soil
CEC	Cation Exchange Capacity, either total or individual ion, e.g. calcium, magnesium, sodium, potassium
CHEMDYN	Chemical Dynamic Processes, e.g. Langelier Saturation Index
CONSTITS	Individual constituents of sample, reported by percent - water, oil, etc.
CR+6	Hexavalent Chromium
DDWM	Dissolved Drinking Water Metals
DISTSTLC	CAM Metals - STLC performed by leaching with distilled water
DMETALS	Dissolved Metals not requested in a complete suite -incl. Boron and Silica
DPPM	Dissolved Priority Pollutant Metals, more extensive list of metals than DDWM
DWP	Drinking Water Pesticides
EDB	EPA504 Ethylene Dibromide
EPA1002	Gross Algae Test
EPA1003	Water Flea Test
EPA335.2	EPA335.2 for Cyanide
EPA3580	Gas Additive Fingerprint
EPA502.2	Drinking Water Volatile Organics by GC
EPA504	EPA Method 504 Fumigant/Nematocide in Drinking Water
EPA524.2	EPA Method 524.2 Drinking Water Compounds at low detection limits by mass spectrometry.
EPA524.2+ EPA601	EPA Method 524.2 plus additional compounds EPA Method 601

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 19 of 36
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2-oct-1995
08:55:14

Requested Analyses and Descriptions

Requested Analysis	Description
EPA601+	EPA Method 601 plus some additional compounds
EPA601-	Selected EPA Method 601 compounds
EPA602	EPA Method 602
EPA602-	Selected EPA Method 602 compounds
EPA608	EPA Method 608 Pesticides and PCBs
EPA610	Polyaromatics by High Performance Liquid Chromatography
EPA615	EPA Method 615 Chlorinated Herbicides
EPA624	EPA Method 624 Waste and ground water by mass spectrometry
EPA624+	EPA Method 624 plus additional compounds
EPA624-	Selected EPA Method 624 compounds: Acetone, MEK, Benzene, MIBK, Toluene, and p-Xylene
EPA625	EPA Method 625
EPA625-	Selected EPA Method 625 compounds
EPA8010	EPA Method 8010 Halogenated Volatile Organics (more compounds than EPA601)
EPA8011	EPA 8011 Method for EDB at 20ppt detection limit
EPA8015	EPA Method 8015 Nonhalogenated Volatile Organics
EPA8015+	8015 Fingerprint
EPA8020	EPA Method 8020 Aromatic Volatile Organics
EPA8021	EPA Method 8021-Solid Waste Volatile Organic Compounds with PID and Hall Detector(Combined 8010/8020
EPA8080	EPA Method 8080 Organochlorine Pesticides and PCBs
EPA8120	EPA Method 8120 Chlorinated Hydrocarbons by GC
EPA8140	Phosphorus-based pesticides
EPA8150	EPA Method 8150 Chlorinated Herbicides and Other Chlorinated Acids
EPA8240	EPA Method 8240 GC/MS Volatile Organics
EPA8240+	EPA Method 8240 plus additional compounds
EPA8260	EPA Method 8260 GC/MS Volatile Organics
EPA8270	EPA Method 8270 Base, Neutral and Acid Semi-Volatile Organics
EPA8280	EPA Method 8280 Polychlorinated Dibenzo-p-dioxins and polychlorinated dibenzo-furans
EPA8290	High Resolution Dioxin by EPA 8290
EPA8318	EPA Method 8318 N-Methylcarbamates (Pesticides)
EPA9310	Radiological analyses for Gross Alpha and Gross Beta for standard waste
EPATO14	Volatile Organic Compounds in Air - Stainless Steel Spheres

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 20 of 36
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2-oct-1995
08:55:14

Requested Analyses and Descriptions

Requested Analysis	Description
EPATO14+	Volatile Organic Compounds in Air with additional peaks identified
EPATO2	Volatile Organic Compounds in air - Sorption Tubes (Tenax,Charcoal)
EPTOXM	EPTOX Metals
FIELDMEAS	Field measures of physical properties (temperature, pH, Specific Conductance)
FSOILVAP	Field Soil Vapor, Soil Surface Flux
FUEL	Hydrocarbons not specified in another suite (by IR, analysis method EPA418.1)
GAMMASPEC	Gamma Spectrum Radiological Analyses
GENMIN	General Mineral Anions and Cations, Surfactants
HE	High Explosive Compounds: HMX, RDX, TNT
ICMSMET	ICP Mass Spectrum Analysis for metals-leachate
ICMSMETD	ICP Mass Spectrum Analysis for dissolved metals
ICMSRAD	ICP Mass Spectrum Analysis for Uranium isotopes, Thorium 232 and other isotopes as leachate
ICMSRADD	ICP Mass Spectrum Analysis for dissolved Uranium isotopes, Thorium 232 and other isotopes
INORG	Miscellaneous inorganics, TDS, TSS, pH, Specific Conductance, Acidity,Turbidity (not part of GENMIN)
LSOILVAP	Lab Soil Vapor most commonly for Petrex Tubes
NIOSH1003	NIOSH 1003 Tetrachloroethene in air
NIOSH1022	NIOSH 1022 Trichloroethene in air
NIOSH1501	NIOSH 1501 Benzene in air
NPDES	Request for a particular metal, requiring special detection limit for NPDES permit self-monitoring
NPDESMETAL	A specific suite of 19 metals, analyzed to determine compliance with NPDES permit order
NUTRIENTS	NO3, NO2, TKN, NH3, P, PO4, Total Phosphate, and Total Organic Nitrogen when not in other suites
OG	Oil and Grease (EPA413.2 must be specified)
ORGANICS	Miscellaneous organic compounds not analyzed in a complete suite
ORGCARB	Partial and Total Organic Carbon
OXYDEM	Biological and Chemical Oxygen Demand
PCB	PCBs not included in other suites
PHENOLICS	Individual Phenolics, total low level and total phenolics
PHOTOVAC	Analysis in field by Photovac, various compounds
PHYSPROP	Bulk density, Grain Size, Kd, Particle density, pH, Flashpoint, Soil Moisture

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 21 of 36
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2-oct-1995
08:55:14

Requested Analyses and Descriptions

Requested Analysis	Description
PID8010	Photo Ionization Detector results for EPA 8010 compound(s)
QNT-GAS-MS	Quantitative analysis of gas-phase constituents by mass spectrometry
RAD	Radiological analyses: Tritium, Gross Alpha/Beta, Ur, Cl, O2 isotopes; Specify in anl_method
RCI	Reactivity, Corrosivity, and Ignitability
SCANRAD	Radiological Screening
SUDAN4	Visibly check for hydrocarbons using a dye; result is yes(1) or no(0).
SW846-6000	Individual metals by ICAP analysis
SW846-7000	Individual metals by graphite furnace
SW846-7131	Cadmium by graphite furnace atomic absorption
TBOS	Modified EPA8015 analysis for TBOS (tetra (2-ethylbutoxy) silane
TCLPM	Toxic Characteristic Leaching Procedure Metals
TCLPP	Toxic Characteristic Leaching Procedure Pesticide Organics
TCLPSV	Toxic Characteristic Leaching Procedure Semivolatile Organics
TCLPV	Toxic Characteristic Leaching Procedure Volatile Organics
TDWM	Total Drinking Water Metals
THM	Trihalomethanes: Bromodichloromethane, Bromoform, Chloroform, Dibromochloromethane, and Total THM
TMETALS	Total Metals not requested in a complete suite - includes Boron and Silica - Unfiltered sample
TOX	Total Organic Halides
TPH	Gas or Diesel
TPPM	Total Priority Pollutant Metals, more extensive list of metals than DDWM
WGMGLSMET	Livermore Site WGMG metals suite

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 22 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment E

Analytical Laboratory Codes as of October 1995

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 23 of 36
--------------------------------------	------------------------------	--	----------------------

Attachment E. Outside labs and their codes.

Lab	Full Name	Code
AIRTOXICS	Air Toxics Ltd.	AX
BC.EVILLE	Brown & Caldwell Emeryville	BC
BC.PASADEN	Brown & Caldwell Pasadena	BP
BETA.ANALY	Beta Analytical	BA
CAL	California Analytical Laborato	CA
CCAS	Coast-to-Coast Analytical Serv	CC
CEP	Controls for Env. Pollution	CE
CHROMALAB	ChromaLab, Inc.	CR
CLAYTON	Clayton Environmental Cnslt	CL
CLS	California Laboratory Services	CS
CURTISTOMP	Curtis & Tompkins, Ltd	CT
DBSTEVEENS	Daniel B. Stevens & Associates	DS
EARTHENV	Earth and Environmental Scienc	ER
EMSFIELD	EMS Field Sampling Techs	FM
ENLAB	Enlab Mobile	EB
ENVSCIGSL	EnvSci Low Level GammaSpec Lab	GL
ENVSSF	Environmental Sci Scanning Fac	ES
ENVSVL	Environmental Sci VOC Soil Lab	EN
ERDFIELD	ERD Field Sampling Techs	EF
ESEINC	Env Sci & Engineering Inc	EE
ETC	Environmental Testing and Cert	ET
EUREKA	Eureka Laboratories	EU
FGLSTK	FruitGrowers Environmental Lab	FS
FRUITGROWL	Fruit Growers Laboratory, Inc.	FG
GEOANAL	GeoAnalytical Laboratories, Inc	GA
GTELCON	Groundwater Tech. Envir. Lab.	GT
ITASRICH	IT Anal Services-Richland, WA	IR
ITASSTSL	International Technology Corp.	IT
LBLIGCL	LBL Isotope GeoChem Laboratory	LC
LLNL151	Nuclear Chemistry LLNL Lab	NC
LLNL222	C & MS-Gas Chromatography	MS
LLNL222GM	C & MS-Gas Mass Spec.	GM
LLNL253	Hazards Control LLNL Lab	HC
LLNL412	C & MS-Berm and Rain Waters	MR
LLNLCES	LLNL C&MS Environmental Servic	ME
LLNLDBBL	Characterization Labs-Bacterio	BL
LLNLDBCH	Characterization Labs - Chemis	CH
LLNLDBML	Characterization Labs-Mineral	ML
LLNLDBPV	Characterization Labs-Photovac	PV
LLNLDBSL	Characterization Labs - Soil	SL
LLNLEAS	LLNL Envir.-Analytical Sciencs	EA
LLNLECL	Environmental Chemistry Lab	EC

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 24 of 36
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Attachment E. (Continued)

Lab	Full Name	Code
LLNLPCL	LLNL Particle Characterization	PC
LOCKHEED	Lockheed Analytical Services	LH
MCKESSON	McKesson Environmental Srvcs	MC
NAREL	Natl Air & Rad. Env. Lab (EPA)	NA
NERI	Northeast Research Institute	NE
NWT	New World Tech Anal&Cnslt Serv	NW
PACE	Pace Laboratories, Inc	PA
S300F834	Site 300 Field Lab 834 Area	SF
SUPERIOR	Superior Precision Analytical	SA
TMA	Thermo Analytical Inc.	TM
WEISSASSOC	Weiss Associates	WA
WLGORE	W. L. Gore and Assoc. Inc.	GO
WOODCLYDE	Woodward-Clyde Consultants	WC

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 25 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment F

Environmental Restoration Division Critical Well List and Sampling Locations

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 26 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment F-1. List of sampling locations that should be clean.

GSA	B834/B833	HE	EFA/WFA	EFA/WFA	Pit 6
CDF-1	W-831-01	Well 18	K1-01C	NC7-53	CARNRW1
CON-1	W-833-30	Well 20	K1-02A	NC7-65	CARNRW2
W-25N-07	W-834-T1	W-35C-02	K1-03	NC7-68	CARNRW3
W-25N-10	W-834-T3	W-808-01	K1-04	NC7-69	CARNRW4
W-25N-11	W-840-01	W-808-02	K1-05 ^{3H}	NC7-71	CARNRW5
W-25N-12	W-841-01	W-808-03	K1-06	NC7-75	W-33C-01
W-25N-20		W-809-02	K2-01B	W-851-05	EP6-05
W-35A-02		W-809-03	K2-02B	W-851-06	EP6-07
W-35A-03		W-810-01	K2-03	W-851-07	K6-01
W-35A-04		W-815-08	K7-06	W-851-08	K6-03
W-35A-05		W-818-04	K7-10		K6-04
W-35A-06		W-823-01	K8-01 ^{3H}		K6-22
W-7DS		W-823-02	K8-02 ^{3H}		K6-23
W-7ES		W-823-03	K8-03 ^{3H}		K6-25
W-7J		W-827-03	K8-04		K6-26
W-873-01		W-827-05	K8-05		
W-843-01			NC2-05		
W-843-02			NC2-07		
			NC2-10		
			NC2-20		
			NC2-21		
			NC2-23		
			NC7-17		
			NC7-18		
			NC7-29		
			NC7-44		
			NC7-45 ^v		
			NC7-46		
			NC7-47		
			NC7-48		
			NC7-49A		

^{3H} May have VOCs, should be tritium free.

^v May have tritium, but should not contain VOCs.

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 27 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment F-2. Livermore Site Treatment Facility sampling locations.

Sampling locations

TFA-E001

TFB-E002

TFC-E003

TFD-E004

TFE-E005

TFF-E006-AQ

TFF-E006-VPR

TFB-R001

TFB-R002

TFC-R003

TFE-R005

Note:

Last revision 01/13/94

Attachment F-3. Site 300 Treatment Facility samples.

All effluent samples

Corral Hollow Creek samples

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 28 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment G

ERD Shipping Document

Environmental Restoration Division NON-HAZARDOUS ENVIRONMENTAL SAMPLE SHIPPING REPORT

Date: _____

Destination: (Check one)

- ☐ California Laboratory Services (CLS), Rancho Cordova, CA 95742
- ☐ International Technology Corporation (IT), St. Louis, MO 63045
- ☐ GTEL Environmental, Concord, CA 94520
- ☐ Other _____

Please specify

Zip Code

These destination laboratories serve as the courier themselves.

Contact:

Site 300

Mainsite

(Check one) ☐ Valerie Kiszka 2-9777 ☐ Gene Kumamoto 2-8128

Commodity: (Check below all that apply)

- ☐ Aqueous Environmental Samples
- ☐ Soil Environmental Samples
- ☐ Solid Environmental Samples
- ☐ Vapor Environmental Samples

Number of Packages:

(example: 1 ice chest)

Total Weight:

(estimated)

Comments:

Chain of Custody (COC) Accession Numbers: (Upper Right hand corner of COC)

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Report Prepared by :

Signature

Print name

Phone #

Please Mail to The Traffic Office at L-516

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 30 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment H

LLNL Shipping Document

PAGE 1 OF ____ PAGES

RECEIVED BY _____ DATE: _____

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 32 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment I

Examples of Sample Labels

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 33 of 36
------------------------------	----------------------	------------------------------------	---------------

California Laboratory Services

SAMPLE I.D.	
LOCATION	
PROJECT	
SAMPLED BY	
DATE	TIME
PRESERVATIVES	

3249 Fitzgerald Road, Rancho Cordova, CA 95742 • (916) 638-7301

California Laboratory Services

SAMPLE I.D.	
LOCATION	
PROJECT	
SAMPLED BY	
DATE	TIME
PRESERVATIVES	

3249 Fitzgerald Road, Rancho Cordova, CA 95742 • (916) 638-7301

Procedure No. ERD SOP-4.2	Revision Number 2	Effective Date December 1, 1995	Page 34 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment J

Examples of Sample Identifications and How They are Generated

Procedure No. ERD SOP 4.2	Revision Number 2	Effective Date December 1, 1995	Page 35 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment J-1. Sample identifications and how they are generated.

Sample ID code	Sample ID code breakdown
813-01-12.0U	Building 813 area borehole not completed as a well yet (no prefix), 01 ^a , 12.0 (ft), U (unsaturated)
D-834-01-1.0F	D (dry well), Building 834 area, 01 ^a , 1.0 (ft), F (saturation status undeclared)
U801-02-3.00F	U (underground tank), Building 801 area, 02 ^a , 3.00 (ft), F (undeclared)
W-834-S2A	W (monitor well), Building 834 area, S (septic tank), 2A ^a
BLDG875-DIW	Building 875, DIW (deionized water)
CTSW-834-1	CT (cooling tower), SW (surface water), Building 834 area, 1 ^a
SVV-833-040	SVV (soil vapor active vacuum), 833 area, 040 ^a
SVX-834-005-14D	SVX (Petrex soil vapor), 834 area, 005 ^a , 14D (days buried in ground)
TR-834-T9B-5.1U	TR (trench building), Building 834 area, T9B ^a , 5.1 (ft), U (unsaturated)
TF-GSA-CHC-PDT-1320	TF (treatment facility), General Services Area, CHC (Corral Hollow Creek), PDT (pacific daylight time), 1:20 pm
W-26R-03-PST1800	W (monitor well), 26R ^b , 03 ^a , PST (pacific standard time), 6:00 pm
V-PIT6-03	V (vegetation), Pit 6 area, 03 ^a
3SS-HE-03-0.5U	3SS (Site 300 surface soil), HE area, 03 ^a , 0.5 (ft), U (unsaturated)
3SW-PIT6-01	3SW (Site 300 surface water), Pit 6 area, 01 ^a
W-873-01-BT1-E	W (monitor well), Building 873 area, 01 ^a , BT1 (bubble tank #1), E (effluent)
813-01-39.0BW	Building 813 area, 01 ^a , 39.0 (ft), BW (bailed water from an open borehole)
K6-17-HYI-60M	K6 (K Division, Pit 6), 17 ^a , HYI (hydraulic test influent), 60M (60 min. test)
NC7-71-HYE-24H	NC7 (Nuclear Chemistry Pit 7), 71 ^a , HYE (hydraulic test effluent), 24 h (24-hour test)
W-25M-03-TNKR	W (monitor well), 25M ^b , 03 ^a , TNKR (tanker water)
W-889-01-WD	W (monitor well), Building 889 area, 01 ^a , WD (well development water)
EP6-05	EP (Environmental Protection Pit 6), 05 ^a
W-4AS	Drilled as a satellite to production well 4, S (shallow) indicates depth of the aquifer
BC6-12	BC6 (Brown & Caldwell, Pit 6), 12 ^a
CON-1	Private water-supply well on the Connolly Ranch
CDF-1	Private water-supply well on the California Division of Forestry property
GALLO-1	Private water-supply well on the Gallo Ranch
B-1005-77.0S	Livermore Site Borehole 1005 ^c (not completed as a well yet), 77.0 (ft), S (saturated)
W-1009	W (Livermore Site monitor well), 1009 ^c (completion in B-1009)
CT-291	CT (cooling tower) near building 291 Livermore Site

Procedure No. ERD SOP 4.2	Revision Number 2	Effective Date December 1, 1995	Page 36 of 36
------------------------------	----------------------	------------------------------------	---------------

Attachment J-1. (Continued)

Example sample ID code	Sample identification code breakdown
SIB-ETS-001	Livermore Site SIB (source investigation borehole) in ETS (East Taxi Strip) area near T5475, 001 ^a
SIP-IES-002	Livermore Site SIP (source investigation piezometer), IES (Infiltration Experiment Site) area, 002 ^a (completion in SIB-IES-002)
SSS-025-0.5F	Livermore Site SSS (source investigation surface soil) , 025 ^a , 0.5 (ft), F (undeclared)
TFA-UVI-PST0900	Livermore Site TF (treatment facility) A, UV (ultraviolet unit), I (influent), PST (pacific standard time), 9:00 am
TFF-E006-AQ	Livermore Site TF (treatment facility) F, E (effluent), 006 (F is the sixth letter in the alphabet), AQ (aqueous sample port)
HW-SNL-001	HW (heat injection well), SNL (on Sandia property), 001 ^a
TEP-GP-105-121.8S	TEP (temperature monitoring well), GP (at the Gas Pad), 105 (1 indicating the second series of drilling and 05 ^a), 121.8 (ft), S (saturated)
TOM-SNL-001	TOM (tomographic borehole), SNL (on Sandia property), 001 ^a
SDW-012	SDW (source investigation drain water), 012 ^a
SSD-005	SSD (source investigation storm drain), 005 ^a
SVB-GP-008A-29.0F	SVB (source investigation vapor borehole), GP (at the Gas Pad), 008A (008 ^a boring, A indicating that it was rebored), 29 (ft), F (undeclared)
406D-004	Building 406D (drum) for disposal screening, 004 ^a
B-407-110.0DF	B (borehole), 407 ^c , 110.0 (ft), DF (drilling fluid)
FH-112	FH (fire hydrant), 112 (hydrant number assigned by Plant Engineering)
SVS-518-001-2.0F	Livermore Site SVS (soil vapor survey), 518 area, 001 ^a , 2.0 (ft), F (undeclared)
GSB-445-160.0BW	Livermore Site GSB (Gas Station Borehole), 445 ^c (not a completed installation yet), 160.0 (ft), BW (bailed water)
GSW-445	Livermore Site GSW (Gas Station monitor well), 445 ^c (completion of GSB-445)
U241-R1U1-5.7F	Soil sample near Underground Tank 241-R1U1, 5.7 (ft), F (undeclared)

^a Sequential number and/or letter assigned to the location when more than one sampling site exists within the study area.

^b The U.S. Geological Survey Well Numbering System used to name off-site wells.

^c Sequential number where right two digits are sequential and left two digits identify drilling year.